

DIGITAL FUTRONIC MODULE



Series 2000/M2CP Actuator

THE SIMPLEST WAY TO EQUIP VALVE ACTUATORS FOR MORE PRECISE, RESPONSIVE PROCESS CONTROL



EIM's Digital Futronic control system enables a single electronic module to perform both modulating and positioning valve control from analog control signals. The Digital Futronic module uses digital electronics to improve position control and feedback, and to simplify calibration. Any EIM Series 2000 actuator can be upgraded to Digital Futronic.

Built upon EIM's versatile M2CP controls package, the Digital Futronic features plug-in circuit boards and a user-friendly field connection terminal board for simple interfacing with all types of analog controls. The module accepts standard signal logic (4mA = close) or reverse signal logic (4mA = open) simply by changing a DIP switch position.

The Digital Futronic module controls three EIM motor control starter types:

1. Futronic II: Electro-mechanical AC motor starter, 1- or 3-phase power
2. Futronic III: SCR Solid-State DC motor starter, 1-phase power
3. Futronic IV: Triac Solid-State (SSR) AC motor starter, 3-phase power

The Digital Futronic module can be equipped to provide position feedback either with a conventional potentiometer or with EIM's HPI-M2CP – a Hall-Effect non-contacting feedback device that cannot wear out from friction.



The Futronic system can employ either a standard potentiometer (top), or a contactless Hall-Effect device (bottom) for position feedback.



EIM's mechanical dial position indicator (MDPI) equipped with the HPI-M2CP non-contacting feedback device.



The MDPI equipped with a 1000-ohm potentiometer.



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FEATURES AND SPECIFICATIONS

INTEGRAL AUTO-TUNING PID CONTROL maximizes accuracy without user adjustments.

DIGITAL MICROCONTROLLER adapts to any actuator and valve size, speed or stroke time, process pressure, etc., by auto-tuning controls. This enables users to obtain maximum accuracy without having to make adjustments for bandwidth, delay time, etc.

AUTO-CALIBRATION of position input to valve-travel limits.

DC MOTOR SPEED CONTROL. Futronic III uses single-phase input power and full wave voltage rectification to control the DC motor.

EASY TO SET UP AND CALIBRATE to user's external analog control signal input and analog position feedback. Perform setup and calibration using DIP switches and two miniature pushbuttons. No potentiometer adjustments, no pot rewiring for reverse signal operation. The system requires no resistance or voltage readings, and there are no setscrews to unlock and relock.

LED INDICATORS for normal/faults, setup mode, loss of input signal and solid-state starter trigger.

ISOLATED ANALOG INPUT: 4-20mA with 12-bit (0.25%) resolution (calibration range of 0-24mA). 210 to 750 ohms loop resistance at 24V. Operates at 10V to 32V loop supply.

ISOLATED ANALOG OUTPUT: 4-20mA with 16-bit (.0015%) resolution (calibration range of 0-24 mA). Drives loop resistance up to 750 ohms. True current source with internal 24VDC power supply; no external loop power is required. Internal auto-resetting fuse for 24VDC power supply.

ISOLATION DIELECTRIC STRENGTH: 2500VAC for 1 minute (input to output and I/O to ground).

LOSS OF INPUT SIGNAL OPTIONS: "Fail/last position" or "fail/to any preset position" (between 0 and 100%).

CONTROL ACCURACY: Futronic II +/- 1.0% @ 15 seconds stroke time or greater.
Futronic III +/- 0.25% @ 15 seconds stroke time or greater.
Futronic IV +/- 0.5% @ 15 second stroke time or greater.

NONLINEARITY: 0.05% of calibrated analog input and output over full range of 0-100%.

OPERATING TEMPERATURE RANGE: -40C to +85C (-40F to +185F), Humidity: 10% - 95%, non-condensing.



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